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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,516	12/22/2003	Todd Coons	EH- 11065	8176

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EXAMINER

NGUYEN, NINH H

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/743,516	Applicant(s) COONS ET AL.	
	Examiner Ninh H. Nguyen	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2003 and 07 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 07/07/05 have been fully considered but they are not persuasive.

Regarding claims 5-11, Applicant discusses at length on the differences between the method of drilling holes of Adamski and the instant invention, and finally speculates that a flat support of Adamski may cause damage to the vane cluster due to unintentional contacts between the electrode and the vane cluster, and there is no motivation to combine the teaching of Keith and Adamski et al.

The Examiner respectfully disagrees.

Adamski teaches that curved cooling holes significantly reduce airfoil metal temperature and thus improve airfoil cooling (col. 1, lines 45-48), and that curved cooling holes can be made using electrical discharge machining (EDM) and provide an electrode for drilling curved cooling holes in an airfoil. Adamski further teaches fabricating a flat supporting member with necessary clearances for turbine airfoils applications (col. 4, lines 16-19). In summary, Adamski teaches why curved cooling holes on airfoils are desirable and how to make the holes. A person having ordinary skills in the art would definitely applying Adamski teaching to improve cooling of turbine airfoils without causing damage to the airfoils.

Other arguments are moot in view of new grounds of rejections.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Caddwell, Jr. et al. (6,416,278).

Caddwell discloses a cast vane cluster comprising: an inner platform 16 (Figs. 1-8) including an inner endwall surface and an inboard cavity (Fig. 2); an outer platform 14 including an outer endwall surface and an outer cavity (Fig. 1) wherein said outer platform is spaced radially outboard of said inner platform and said outer endwall surface faces said inner endwall surface; at least two airfoils spanning between said inner and outer endwall surfaces (Fig. 1), each including, a concave surface, a convex surface, a leading edge and a trailing edge located axially rearward of said leading edge, wherein said concave and convex surfaces of adjacent airfoils face each other; a duct bounded by said adjacent concave and convex surfaces and said inner and outer endwall surfaces; at least one hole 18 including an inlet cross sectional area and an outlet cross sectional area; and wherein said at least one hole outlet cross sectional area is located on said duct boundary;

wherein at least one hole on the airfoils is not visible when viewed from an external location axially rearward of the trailing edges (Fig. 1); and

wherein at least one hole on airfoils are not visible when viewed from an external location axially forward of the trailing edges since the airfoil is curved (Fig. 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caddwell, Jr. as applied to claims 1-4 above in view of Adamski.

Caddwell discloses all the limitations including at least one hole in 18 has an inlet cross sectional area, an outlet cross sectional area, a bore extending between the inlet and the outlet areas wherein the bore has a central, longitudinal axis; and wherein the at least one outlet cross sectional area is located on the duct boundary.

However, Keith does not disclose the at least one inlet cross sectional area is not visible when viewed along the longitudinal axis from an external location as claimed.

Adamski teaches advanced shaped cooling holes on turbine airfoils wherein the holes have curved shaped formed by electrical discharge machining to improve cooling of the airfoils (col. 1, lines 30-50).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made, to make the vane cluster of Caddwell with the curve shaped cooling holes of Adamski for the purpose of improving cooling of the airfoils. Due to the curve shaped cooling holes, the inlet cross sectional area of a cooling hole is not visible when viewed along the respective longitudinal axis from an external location.

Conclusion

Applicant's amendment, introducing the limitations of "cast vane cluster" necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

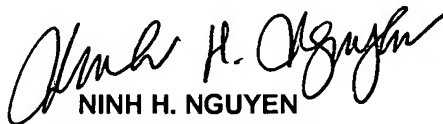
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ninh Nguyen whose telephone number is (571) 272-4823. The examiner can be normally reached on Monday-Friday from 7:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (571) 272-4820. The fax number for this group is (571) 273-8300.

Art Unit: 3745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, please go to <http://pair-direct.uspto.gov> or contact the Electronic Business center (EBC) at 866-217-9197 (toll-free).



NINH H. NGUYEN
PRIMARY EXAMINER

Nhn
September 20, 2005